

REMARKS

The present application included claims 14, and 38-62. Claims 57-62 were withdrawn from consideration. Claims 14, and 38-56 stand rejected. The Applicants respectfully submit that the pending claims define patentable subject matter.

Claims 38, 42, 46, 49, and 51-53 stand rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent No. 5,173,944 (“Begault”). Claims 39-41, 43, and 47-48 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Begault in view of United States Patent No. 6,366,679 (“Steffen”). Claims 44-45, 50, and 54-56 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Begault in view of United States Patent No. 5,825,894 (“Shennib”). Claim 14 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Shennib in view of United States Patent No. 6,067,360 (“Kasai”). The Applicants respectfully traverse these rejections for at least the following reasons:

I. Begault Does Not Anticipate Claims 38, 42, 46, 49, And 51-53

The Applicants first turn to the rejection of claims 38, 42, 46, 49, and 51-53 as being anticipated by Begault. Begault “relates generally to the field of stereophony and, more specifically, to a head related transfer function pseudo-stereophony in which two differentiated audio channels are derived from a single channel.” Begault at column 1, lines 14-18. “‘Pseudo-stereophony’ is a generic description of a family of techniques that allow the derivation of two channels of sound from a monaurally-recorded, one channel source.” *Id.* at column 1, lines 20-24.

Begault discloses an “apparatus for producing pseudo-stereophonic sound from a monaural signal.” *Id.* at column 2, lines 41-43. The apparatus includes two microphones

that are positioned **within** the ears of a listener. In particular, Begault discloses the following:

Two probe microphones 38 and 40 are placed **inside the ears of a listener** whose pinnae match the average shape and transfer function of an average listener. The two channel signal for the pseudo-stereophonic output is obtained from the output of the two microphones, which can be delivered to a left channel speaker 42 and a right channel speaker 44 which produce pseudo-stereophonic sound for a listener 46.

Microphones are placed **inside the ears of the listener** to capture the characteristic frequency and phase response for a given angle of incidence from a source to a listener. The characteristic response is convolved with sound that enters the ear and contributes substantially to our ability to listen spatially. This is known as the “head related transfer function” (HRTF)....

Id. at column 3, line 65 to column 4, line 16 (emphasis added). Notably, the microphones 38 and 40 are placed **inside the ears of the listener**. However, the apparatus of Begault shows and describes speakers 14, 20, 22, 24, and 26. Further, speakers 42 and 44 are connected to the microphones. The “two channel signal for the pseudo-stereophonic output is obtained from the output of the two microphones, which can be delivered to a left channel speaker 42 and a right channel speaker 44. “ *See id.*

Begault does not describe, teach, or suggest, however, “wherein the audio signals are representative of recordings made by a plurality of microphones that are placed **at locations relative to a recording position that correspond to the locations of the plurality of loudspeakers relative to the listening position,**” as recited in claim 38. As shown in Figure 1 of Begault, for example, the speakers 42 and 44 are outwardly directed away from the microphones to which they are connected. The microphones 38 and 42

also do not correspond to the locations of any of speakers 14, 20, 22, 24, 26, 42 or 44. Begault simply does not describe, teach or suggest that the microphones 38 and 40 are “placed at locations relative to a recording position **that correspond to the locations of the plurality of loudspeakers relative to the listening position.**” Thus, for at least this reason, Begault does not anticipate claims 38, 42, 46, 49, and 51-53.

Additionally, as noted above, Begault specifically discloses that the microphones 38 and 40 are placed **inside the ears of the listener.** Begault does not describe, teach, or suggest, however, that the “microphones during recording [face] away from a center of the recording position,” as recited in claim 38. Instead, the microphones are disposed in the ears of the listener “to capture the characteristic frequency and phase response for a given angle of incidence from a source to a listener.” *Id.* at column 4, lines 5-8. Thus, for at least this reason, Begault does not anticipate claims 38, 42, 46, 49, and 51-53.

With respect to claim 49, Begault simply does not describe, teach, or suggest that any of speakers 14, 20, 22, 24, 26, 42, or 44 “generate sound that appears to, but does not, emanate from another of the plurality of loudspeakers,” as recited in claim 49. There is nothing in Begault that discusses such a feature. Thus, for at least this reason, Begault does not anticipate claim 49.

II. The Proposed Combination Of Begault And Steffen Does Not Render Claims 39-41, 43, And 47-48 Unpatentable

The Applicants next turn to the rejection of claims 39-41, 43, and 47-48 as being unpatentable over Begault in view of Steffen. The Applicants respectfully submit that the proposed combination does not render these claims unpatentable for at least the reasons discussed above.

Additionally, as shown in Figure 2b of Steffen, six loudspeakers are horizontally disposed in a circle, while two other loudspeakers are disposed outside of that horizontal circle. Steffen does not teach or suggest, however, “eight loudspeakers in a circle,” as recited in claim 39. Nor is such an arrangement merely a matter of design choice or personal preference, as suggested in the Office Action. The significance of eight loudspeakers in a circle is discussed in the present application at, e.g., pages 16 -17. Thus, for at least these reasons, the proposed combination does not render claims 39-41 unpatentable.

With respect to claim 41, Figure 2b of Steffen simply does not teach or suggest eight loudspeakers “placed equidistant from the listening position.” At most, Steffen shows six loudspeakers at a first distance, and two others at a different distance from the listener. Thus, for at least this reason, the proposed combination does not render claim 41 unpatentable.

With respect to claim 43, Steffen does not teach or suggest “wherein the plurality of loudspeakers are located at varying heights relative to the listening position.” Steffen, at best, shows six speakers in a circle (and two other speakers that are not part of that circle). However, as clearly shown in Figure 2a of Steffen, the speakers 6 are coplanar. As such, they are not “located at varying heights relative to the listening position.” *See also* Steffen at column 3, lines 38-39 (“horizontally arranged loudspeakers 6 and vertically arranged loudspeakers 4”).

The Office Action cites “elements 7 and 5 of Steffen” with respect to claims 47-48. Steffen states the following with respect to these reference numerals:

The partial signals are convolved in the digital sound-processing processors 5, said processors receiving their input signals via lines 7, which are divided into right, left, and middle lines..... The output lines of the digital sound processing processors 5 are then linked, accordingly, to loudspeakers 4 or 6 arranged in the room.... In this case, for example, the spatial pulse response picked up by microphone 2 undergoes convolution processing in one of the digital sound processing processors 5, and then is emitted via loudspeaker 6.

The description of reference numerals 5 and 7 does not teach or suggest, however, “wherein all but one of the plurality of processed audio signals comprises discrete adjusted versions of the plurality of audio signals and wherein one of the plurality of processed audio signals comprises a combination of the plurality of audio signals,” as recited in claim 47. Nor does that description teach or suggest “wherein the combination of the plurality of audio signals comprises an equal proportion of the plurality of audio signals,” as recited in claim 48. Thus, for at least these reasons, a prima facie case of obviousness has not been established with respect to claims 47-48.

III. The Proposed Combination Of Begault And Shennib Does Not Render Claims 44-45, 50, and 54-56 Unpatentable

The Applicants now turn to the rejection of claims 44-45, 50, and 54-56 as being unpatentable over Begault in view of Shennib. The Applicants respectfully submit that the proposed combination does not render these claims unpatentable for at least the reasons discussed above.

Additionally, with respect to claim 50, the Office Action states the following: “Shennib further discloses speakers are being located at equidistant (Fig. 5) from each other. This would have met the specific calibrated point(s) being located at or near the listening position as claimed.” However, claim 50 does not recite that the speakers are

equidistantly located.” Instead, the claim recites “wherein the at least one audio source is **calibrated by generation of a predetermined sound pressure level at a calibration point located at or near the listening position.**” The Office Action has not explained how the arrangement shown in Shennib teaches, either explicitly or implicitly, the limitations recited in claim 50. For at least this reason, the Office Action has not established a prima facie case of obviousness with respect to claim 50.

IV. The Proposed Combination Of Shennib And Kasai Does Not Render Claim 14 Unpatentable

A. The Proposed Combination Does Not Teach Or Suggest A Loudspeaker At An Overhead Position Directly Above The Test Subject

Shennib discloses a system in which “[t]hree of the speakers, i.e., #1 (89), #5 (93), and #6 (94) are located in the sagittal plane 96 containing the head reference point 88. Speakers #1, #5, and #6 are positioned at altitude angles 0° , 45° , and -45° , respectively, as shown in FIG. 7 at B.” Shennib at column 15, lines 7-11. As shown in Figure 7 of Shennib, the speaker 93 is located **in front of, and above**, the head reference point 88. Because the speaker 93 **is in front of the head reference point 88**, it is not directly overhead the test subject. Speaker 93 is not “located at an **overhead center position directly** above the test subject in the listening position.” That is, the speaker 93, as clearly shown in Figure 7, is not directly over reference point 88 (i.e., the head of a listener). Further, Kasai also does not teach or suggest a speaker located at such a position. Thus, the Applicants respectfully submit that the combination of Shennib and Kasai does not render claim 14 unpatentable at least for this reason.

B. A Conclusory Statement Regarding Design Choice Is Not Sufficient To Establish A Prima Facie Case of Obviousness

The Office Action acknowledges that the proposed combination does not teach the limitation noted above, but summarily concludes that such a speaker location is merely a matter of design choice. *See* November 30, 2006 Office Action at page 7 (“Although not directly above the test subject it would be a matter of design choice to place the speaker directly above the subject since claim 14 only claims speaker locations.”).

Initially, placing a speaker at a direct overhead position is not merely a design choice. The overhead speaker offers advantages, which are discussed, for example, at page 19 of the present application.

Moreover, the Office Action does not point to anything in either Shennib or Kasai that teaches, or remotely suggests, “a second further loudspeaker located **at an overhead center position directly above the test subject in the listening position,**” as recited in claim 14 of the present application. The proposed combination of Shennib and Kasai simply does not teach or suggest such a limitation.

The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. **The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant’s specification, to make the necessary changes in the reference device.**

Ex parte Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984) (emphasis added). The Office Action does not point to a “motivation or reason” in the prior art to change Shennib as indicated above. Instead, the Office Action merely

concludes that “such a location is merely a matter of design choice,” without specifying any motivation in the prior art to change the specific arrangement shown in Shennib.

The speculation within the Office Action regarding “design choice” is, moreover, no substitute for a suggestion that simply is not present in the cited references. *See In re Lee*, 277 F.3d 1338, 1344 (Fed. Cir. 2002). Thus, at least for these reasons, the Applicants respectfully submit that the proposed combination of Shennib and Kasai does not render claim 14 unpatentable.

C. No Motivation Or Suggestion To Combine Shennib With Kasai

Additionally, the Applicants maintain that one having ordinary skill in the art would not be motivated to combine Shennib and Kasai to produce a “multi channel sound reproduction system for testing hearing and hearing aids,” as recited in the claims of the present application. Shennib “relates to hearing evaluation and hearing aid fitting.” Shennib at column 1, lines 10-13. On the other hand, Kasai relates to “an apparatus and method for localizing a sound image, more specifically the simplification of its structure and processes.” Kasai at column 1, lines 15-17. In particular, Kasai relates to “surround sound” systems.

The Applicants respectfully submit that these are nonanalogous areas of art and one having ordinary skill in the art would not be motivated to combine them. As set forth in the background section of the present application at pages 6-7:

It may be suggested that a system similar to entertainment **"surround sound" systems** may be used to address many of the above-mentioned problems. However, **such entertainment systems are not suited for use in hearing and hearing aid assessment for many reasons.** For example, in entertainment audio systems, the loudspeakers are located substantially distant from the listener, at or near

the perimeter of a listening area that is accessible to multiple listeners. As with previous multiple-loudspeaker systems used in hearing and hearing-aid assessment, signals received by listeners from such entertainment audio systems contain a substantial contribution of the acoustical qualities of the listening environment. In any system that delivers signals containing the acoustical qualities of the listening environment as such, a given recording sounds somewhat different in different listening environments and has different acoustical qualities in each listening environment. Such systems, therefore, do not enable the desired standardization for hearing and hearing aid assessment.

In addition, **entertainment audio systems are designed so that background noises presented to the listener enhance or support the reception of an entertainment event, such as a primary audio signal or a visual picture.** In the real world, however, background noises presented to the listener do not enhance or support the reception of a primary audio signal or a visual picture. Instead, background noises disrupt or compete with the reception of such primary stimuli, resulting in conditions under which the reception of such primary stimuli breaks down. It is these real-world conditions that are desirable for hearing and hearing aid assessment.

Thus, the Applicants respectfully submit that one would not be motivated to combine the entertainment audio system of Kasai with the system of Shennib to produce the system for testing hearing and hearing aids as recited by claim 14 of the present application. At least for this reason, the Applicants respectfully submit that claim 14 should be in condition for allowance.

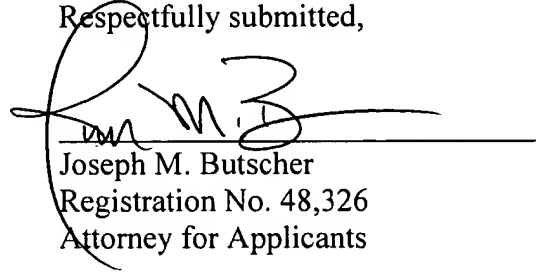
V. Conclusion

The Applicants respectfully submit that the pending claims of the present application should be in condition for allowance for at least the reasons discussed above and/or previously during prosecution. If the Examiner has any questions or the

Applicants can be of any assistance, the Examiner is invited to contact the Applicants.

The Commissioner is authorized to charge any necessary fees or credit any overpayment to the Deposit Account of McAndrews, Held & Malloy, Account No. 13-0017.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'J. M. Butscher', is written over a horizontal line. The signature is fluid and cursive.

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MCANDREWS, HELD & MALLOY, LTD.
500 West Madison Street, 34th Floor
Chicago, Illinois 60661
Telephone: (312) 775-8000
Facsimile: (312) 775-8100

Joseph M. Butscher
Registration No. 48,326
Attorney for Applicants